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ABSTRACT

Among the most often discussed reforms for the teaching profession is the creation of a national board to develop standards and procedures for teacher certification. As a step toward forming such a board, a study was undertaken to determine the regulatory and assessment structures in other professions and the accuracy of reformers' understanding of the functions served by national examinations. Information was obtained from: bulletins of agencies responsible for the examinations; conversations with staff members of professional boards; sociologists investigating the subject of professions; and related published material. Preliminary findings are reported and profiles are sketched to show the structure, content, purpose, and organization of professional boards in the following fields: (1) accounting; (2) architecture; (3) dentistry; (4) law; and (5) medicine. Members of a profession are heavily involved in both preparation and grading of examinations. The purpose of national examinations is to establish basic or technical competence to begin professional practice; no examination studied claimed to determine a high level of competence, and none was an actual test of performance. Evidence suggests that standards for certification in these professions grew from licensure requirements. While these examinations are called national examinations, they are, in reality, graded and accepted by states. (SLD)

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What Research Says About:

STANDARDS AND TESTING IN OTHER PROFESSIONS

Number 7

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Professional and Organizational Development/Research Division

Foreword

Educational reformers and policy-makers are demanding higher standards for the teaching profession. Among the most visible and highly sought reforms is the creation of a national board to develop standards for the teaching profession and procedures for certification. Among the procedures frequently recommended is the development of a national examination(s) for the certification of teachers.

In large measure, the national board concept has been justified by drawing on the examples found in other professions. According to leading spokespersons of the reform movement, the creation of a national board and the development of a national examination for the teaching profession would promote high levels of competence if not excellence in the teaching profession as well as enhance its professional aspects.

In order to produce our own interpretation of the regulatory and assessment structures in other professions and to determine the accuracy of reformers' understanding of the functions served by national examinations, we investigated their claims. Information was obtained from the information bulletins of agencies responsible for the examinations, conversations with staff members from professional boards, sociologists investigating the subject of professions, and related published materials.

Our preliminary findings are presented herein along with profiles which sketch the structure, content, purpose, organization, and administration of the national examination process in other professions.

September 1986

STANDARDS AND TESTING IN OTHER PROFESSIONS Number 7

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- Members of a profession (practitioners, educators) are heavily involved in both the preparation and grading of examinations.

- The purpose of national examinations is to establish basic or technical competence to begin professional practice.
  - — No bulletin of any national examination for a profession that we examined purports to determine a "high level of professional competence."

- National examination (and certification procedures of which examinations are a part) in established professions are conducted with a view toward securing initial licenses for certificate holders and facilitating recognition of professional credentials among state licensure boards.

- It is by no means clear from the cases examined that certification is distinct in spirit from licensure. In fact, evidence suggests that standards for certification grew out of licensure requirements.
  - — The membership of national boards in medicine (FSMB) and architecture (NCARB) is composed of state boards.
  - — In accountancy, the National Association of State Boards of Accountancy (NASBA) performs a review function for the Board of Examiners of the American Institute of Certified Public Accountants (AICPA).

- While board-certifying examinations are called national examinations, in reality it is the states which have the power to decide whether a particular examination will be accepted as evidence of an examinee's qualification for licensure.
  - — 46 and not 50 states accept the Multistate Bar Examination as a partial requirement for licensure.
  - — 48 and not 50 states accept certification from the National Board of Medical Examiners as qualification for a physician's license.

- National examinations are heavily weighted toward multiple-choice questions. However, essay or graphic components have varying degrees of presence in the Uniform CPA, the medical boards, and the Architectural Registration Examination.

- While there is little doubt that national examinations increase public confidence in individual professions, no national examination tests performance. In fact, there are questions surrounding the feasibility of testing performance.
  - — In connection with its position against recertification for medical specialties, the American Medical Association notes, "Professional performance cannot be measured well at the present time because criteria, standards, and technologies to assess professional performance are not well developed." (AMA, 1982)

- Although the lengths to which various professions have gone to develop and validate their own professional examinations is admirable, questions have been raised both about the extent to which some skills are not tested and the possibly deleterious effects of examinations on the educational process.
  - — In architecture, the Architectural Registration Exam does not test aesthetic sensibility, because of the incredible difficulty of developing indicators for criteria such as beauty and ugliness, which would vary with individual clients.
  - — In medicine, the Panel on the General Professional Education of the Physician and College Preparation for Medicine of the Association of American Medical Colleges states, "Increasingly, medical schools have used the National Board's multiple-choice tests to evaluate their student's achievement and to judge the quality of their programs. This has had undesirable consequences . . . the National Board's multiple choice examinations evaluate only a limited range of the qualities medical students should have, but because faculties rely upon them so heavily, the evaluation of important skills that students would acquire during medical schools is relatively limited."

National Examination:

Uniform CPA Examination

Purpose of Examination:

The measurement of technical competence

Recognition:

Fifty states, the District of Columbia, the Virgin Islands, Puerto Rico, and Guam

History:

1917 —3 states administered a joint examination

1962 —the first national examination was administered

Agency Responsible for the Examination:

A voluntary group, the Board of Examiners of the American Institute of Certified Public Accountants (AICPA), is responsible for the preparation of the Uniform CPA Examination and the operation of the Advisory Grading Service.

The Board of Examiners is composed of nine members from accounting firms and universities.

Other Participating Organizations:

Five subcommittees (Accounting Practice, Accounting Theory, Auditing, Business Law, and Grading) report to the Board.

The Director of Examinations of the AICPA has the executive responsibility for these functions. The Director heads a staff of CPAs who draft the Uniform CPA and Unofficial Answers.

The Review Board of the National Association of State Boards of Accountancy (whose members are State Boards of Accountancy) performs an annual operational review of the preparation, grading, and administration of the Uniform CPA Examination. The Review Board also judges test reliability and validity as well as exam security procedures.

Test Structure:

The Uniform CPA is a 9½-hour exam, taken over a 5-day period.

There are five sections: Accounting Practice: Part I, Auditing, Accounting Practice: Part II, Business Law, and Accounting Theory.

Type of Exam:

The Uniform CPA is composed of both multiple-choice and essay questions. Multiple-choice questions are graded automatically and essay questions are graded by the Advisory Grading Service of the AICPA.

Pass Rate:

Approximately 35 percent of total examinees (includes first-time and repeat takers).

National Examination:

Architectural Registration Exam (A.R.E.)

Purpose of Examination:

The demonstration of basic professional competence

Recognition:

Fifty states, the District of Columbia, Puerto Rico, Guam, and the Virgin Islands

History:

1962 — the membership of the National Council of Architectural Registration Boards (NCARB) elected to have examinations prepared by committees of NCARB for use on a national basis by all member boards.

1973 — a new test format was introduced. Two district tests were administered by NCARB, the Professional Examination and the Equivalency Examination. This latter exam eventually became incorporated into the Professional Exam as the "Site Planning and Building Design Test."

1981 — NCARB Examination Validation Study was completed

1983 — First A.R.E. (based on the Examination Validation Study) was administered.

Agency Responsible for the Examination:

National Council of Architectural Registration Boards (NCARB)

The NCARB Exam Committee writes the exam. All committee members are volunteers. A majority are members of state architectural registration board.

The preparation of the 1986 A.R.E. has involved 39 exam question writers, seven Division coordinators, seven Educational Testing Service consultants, a historian, and NCARB staff.

Over 400 architect volunteers grade the Site Design and Building Design sections of the exam. NCARB attempts to assure consistency in the application of grading criteria through its Master Juror Committee, composed to 26 members chosen for their outstanding performance as graders in previous sessions. Individual graders rely on master jurors to answer their questions and to render pass/fail judgements in difficult cases.

Test Structure:

The A.R.E. is a 32-hour, 4-day examination composed of nine divisions. These include: predesign; site design; building design; structural technology-general; structural technology-lateral forces; structural technology-long span; mechanical, plumbing, and electrical systems; materials and methods; and construction documents and services.

Type of Exam:

Each section except for building design contains 60 to 170 multiple-choice questions. Both site design and building design require graphic responses.

Pass Rate:

In 1984, the pass rates for the individual sections for all examinees were as follows:

Pre-Design—54%
Site Design—52%
Building Design—41%
Structural Technology-General—40%
Structural Technology-Lateral Forces—61%
Structural Technology-Long Span—64%
Mechanical, Plumbing, and Electrical Systems—75%
Materials and Methods—65%
Construction Documents and Services—75%
Examinees taking all nine sections—22%

Fewer than one third of all examinees take all nine sections.

Graduates of accredited schools of architecture and first-time takers have higher pass rates other than examinees. First-time takers had pass rates that were 5 to 15 percent higher for each section than the pass rate for all examinees.

National Examination:

National Dental Board Examination

Purpose of Examination:

To assist dental licensing boards in assessing whether a candidate possesses the cognitive skills essential for the competent practice of dentistry.

Recognition:

Forty-nine states, the District of Columbia, Puerto Rico and the Virgin Islands

History

1920 — the first national examination was administered.

Agency Responsible for the Examination:

The Joint Commission on National Dental Examinations is charged with providing and conducting written examinations (exclusive of clinical demonstrations), for the purpose of assisting state boards in determining qualifications of dentists who seek licensure to practice in any state, which recognizes the National Board Examinations.

The legislative and management body of the Joint Commission on Dental Examinations is the Board of Commissioners.

The Board is composed of 15 members drawn from the following agencies:

American Association of Dental Examiners (AADE)	— 6
American Association of Dental Schools (AADS)	— 3
American Dental Association (ADA)	— 3
American Dental Hygienists' Association (ADHA)	— 1
American Student Dental Association (ASDA)	— 1
One public member	— 1

National Board Dental Examinations are constructed by committees of consultants with subject-matter expertise in special areas. There are 13 committees with three to six members each. The Joint Commission on National Dental Examinations is charged with responsibility for appointing members to test construction committees.

Test Structure:

The National Board Dental Examinations are organized into two batteries, called Parts. Part I consists of a series of four examinations taken in a 1-day period, covering the basic biomedical sciences. Examinations include anatomic sciences, biochemistry-physiology, microbiology-pathology, and dental anatomy.

Part II consists of a series of seven examinations taken over a 2-day period, covering clinical subjects. Examinations include operative dentistry, pharmacology, prosthodontics, oral and maxillofacial surgery-pain control, orthodontics-pedodontics, endodontics-periodontics, and oral pathology and dental radiology.

Type of Examination:

National Board Dental Examinations are composed exclusively of multiple-choice test items. Ten of the eleven examinations contain 100 multiple choice items. One examination contains 120 to 125 multiple choice items.

Pass Rate:

Not public information.

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Examinations:

Multistate Bar Examination (MBE)

Multistate Professional Responsibility Examination (MPRE)

Purpose of Examinations:

MBE—One of the measures that may be used in the determination of competence to practice

MPRE—The measurement of an examinee's knowledge of the ethical standards of the legal profession

Recognition:

MBE—46 states, the District of Columbia, the Virgin Islands, Guam, and Puerto Rico

MPRE—31 states

History:

1972 —MBE was first administered

1980 —MPRE was first administered

Agency Responsible for the Examinations:

The National Conference of Bar Examiners (NCBE)

MBE—Examination questions are drafted by six committees (one for each area of the examination), each staffed by bar examiners, law professors, and practicing lawyers. Committees are commissioned by the Office of Testing of the NCBE.

MPRE—The examination is developed by a six member Drafting Committee—comprised of recognized experts in the area of professional responsibility.

Test Structures:

The MBE is a 6-hour examination. The examination is divided into six parts: Constitutional Law, Contracts, Criminal Law, Evidence, Real Property, and Torts.

The MPRE is a 2-hour and 5-minute examination. Ten to 15 percent of the examination measures aspects of the American Bar Association's (ABA) Code of Judicial Conduct. The remaining questions are under both the ABA's Code of Professional Responsibility and the Model Rules of Professional Conduct.

Type of Examinations:

The MBE contains 200 multiple-choice questions

The MPRE contains 50 multiple-choice questions

Pass Rate (MBE):

Approximately 6 percent of examinees. (This figure should be accepted with caution. It is computed from unweighted state averages.)

National Examinations:

National Board Examinations—Certifying Examinations of the National Board of Medical Examiners

Federation Licensing Examination (FLEX I and II)

Purpose of Examinations:

National Board Examinations—A requirement for National Board certification, which provides one of two avenues to licensure (FLEX provides the other avenue).

FLEX—To provide a high quality objective and standardized examination for use by state medical boards and other licensing jurisdictions as their qualifying assessment for physician licensure.

Recognition:

National Board Examinations—48 states, the District of Columbia, Puerto Rico, Guam, and the Canadian provinces of Alberta and Ontario

Over 75 percent of all U.S. medical graduates qualify for initial licensure by virtue of NMBE certification.

FLEX—50 states, the District of Columbia, Puerto Rico, the Virgin Islands, Guam, and the Canadian province of Saskatchewan

FLEX is the only route to licensure open to graduates of foreign medical schools.

History:

1915 —the National Board of Medical Examiners, a private, nonprofit agency, was formed to "prepare and administer examination of such high quality that legal agencies governing the practice of medicine within each state may in their discretion grant a license without further examination for those who have completed successfully the examinations of the National Board."

1968 —FLEX was first administered

1985 —FLEX was first administered in the FLEX I and II format

Agencies Responsible for the Examinations:

National Board Examinations—NBME

Examination material in each subject of Part I and II and each section of Part III is prepared by a separate committee, composed of prominent senior faculty members, teachers, investigators, and clinicians. (Committees are heavily weighted with medical school faculty members). Each question is scrutinized by the committee before being accepted. In addition, the chairman of each Part further investigates each question before including it in the examination

FLEX I and II—Federation of State Medical Boards (FSMB)

The Federation of State Medical Boards (whose members are state medical boards) contracted with NBME to produce FLEX I and II. NBME formed committees which are composed for the most part of practicing physicians with some affiliation with medical schools. A fair number of committee members are from state medical boards.

FLEX committees are structured differently from National Board committees. Whereas the latter are organized by academic subject area, FLEX committees are interdisciplinary.

Test Structure:

National Board Examinations—The National Board Examinations have three parts. Part I, administered after two years of medical school, is a 2-day examination in basic sciences, which include: anatomy; behavioral sciences; biochemistry; microbiology; pathology; pharmacology; and physiology.

Part II is a 2-day examination in clinical sciences which include: internal medicine; obstetrics and gynecology; pediatrics; preventive medicine; public health; psychiatry; and surgery. It is usually taken after the completion of four years of medical school.

Part III is a 1-day examination designed to measure clinical skills. It is usually taken after the completion of the first year of residency.

FLEX—The old FLEX examination was modeled after the National Board Examinations with three parts. The new FLEX I and II series represents a distinct departure from this format. The new examination is focused on clinical diseases and problems as opposed to individual subjects.

Both parts of the new FLEX examination require an understanding of the anatomic and physiological principles underlying major diseases. FLEX I, administered after four years of medical school (when permitted by state statute), is heavily weighted with problems associated with inpatient management and diagnosis. FLEX II, administered after 1 to 2 years of residency, is more concerned with the problems typically encountered in an ambulatory setting. Each part requires 1½ days of examination.

Types of Examination:

National Board Examinations—Parts I and II and the first three sections of Part III are multiple choice. Section 4, Part III uses a patient management problem format (PMP) to evaluate the examinee's knowledge and strategies employed in diagnosis and management.

To quote the NBME, "For actions deemed appropriate (in history taking, physical examination, other diagnostic evaluations, or management), the PMP format is able (through a latent image exposed by a special pen) to give the examinee the results of the choices made, upon which the examinee can build a logical approach to and path through the problem to an appropriate solution . . . The score for the PMP is based upon the number of options that are selected and the number of inappropriate ones that are rejected."

FLEX—FLEX I is composed of 630 multiple-choice questions. FLEX II is composed of 500 multiple-choice questions and 15 to 20 PMPs.

Pass Rates:

National Board Examinations—Approximately 89 percent for Part I and 98 percent for Parts II and III.

FLEX I and II—90 to 96 percent (based upon a reference group of first-time takers in June 1985). If all examinees are considered, pass rates for June 1985 are 60 to 75 percent. For the December examination, pass rates for all examinees are 50 to 65 percent.

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